FUJITSU

SPARC Enterprise
T5440 Server

Installation and Setup Guide

C120-E510-02EN

FUJITSU

SPARC Enterprise™ T5440 Server Installation and Setup Guide

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Preface

This manual provides instructions, background information, and reference material to help you install the SPARC Enterprise™ T5440 Server.

The installation instructions in this document assume that a system administrator is experienced with the Solaris Operating System (Solaris OS).

Note – All internal components except hard drives must be installed by qualified service technicians only.

For Safe Operation

This manual contains important information regarding the use and handling of this product. Read this manual thoroughly. Pay special attention to the section "Notes on Safety" on page xiv. Use the product according to the instructions and information available in this manual. Keep this manual handy for further reference.

Fujitsu makes every effort to prevent users and bystanders from being injured or from suffering damage to their property. Use the product according to this manual.

Structure and Contents of This Manual

This manual is organized as described below:

- Preparing for Installation

  Provides an installation overview for the server.

- Installing the SPARC Enterprise T5440 Server

  Provides instructions for installing the server into a rack.

- Powering On the System

  Provides instructions for configuring and powering on the server.
- Updating the Firmware

  Provides instructions for updating the service processor firmware and the system firmware.
- Selecting a Boot Device

  Provides instructions for selecting a boot device.

Related Documentation

The latest versions of all the SPARC Enterprise™ Series manuals are available at the following Web sites:

Global Site

(http://www.fujitsu.com/sparcenterprise/manual/)

Japanese Site

(http://primeserver.fujitsu.com/sparcenterprise/manual/)

Title	Description	Manual Code
SPARC Enterprise T5440 Server Getting Started Guide	Minimum steps to power on and boot the server for the first time	C120-E504
SPARC Enterprise T5440 Server Product Notes	Information about the latest product updates and issues	C120-E508
Important Safety Information for Hardware Systems	Safety information that is common to all SPARC Enterprise series servers	C120-E391
SPARC Enterprise T5440 Server Safety and Compliance Guide	Safety and compliance information that is specific to the server	C120-E509
SPARC Enterprise/ PRIMEQUEST Common Installation Planning Manual	Requirements and concepts of installation and facility planning for the setup of SPARC Enterprise and PRIMEQUEST	C120-H007
SPARC Enterprise T5440 Server Site Planning Guide	Server specifications for site planning	C120-H029
SPARC Enterprise T5440 Server Installation and Setup Guide	Detailed rackmounting, cabling, power on, and configuring information	C120-E510

Title	Description	Manual Code
SPARC Enterprise T5440 Server Service Manual	How to run diagnostics to troubleshoot the server, and how to remove and replace parts in the server	C120-E512
SPARC Enterprise T5440 Server Administration Guide	How to perform administrative tasks that are specific to the server	C120-E511
Integrated Lights Out Manager 2.0 User's Guide	Information that is common to all platforms managed by Integrated Lights Out Manager (ILOM) 3.0	C120-E474
Integrated Lights Out Manager 2.0 Supplement for SPARC Enterprise T5440 Server	How to use the ILOM 3.0 software on the server	C120-E513
Integrated Lights Out Manager (ILOM) 3.0 Concepts Guide	Information that describes ILOM 3.0 features and functionality	C120-E573
Integrated Lights Out Manager (ILOM) 3.0 Getting Started Guide	Information and procedures for network connection, logging in to ILOM 3.0 for the first time, and configuring a user account or a directory service	C120-E576
Integrated Lights Out Manager (ILOM) 3.0 Web Interface Procedures Guide	Information and procedures for accessing ILOM 3.0 functions using the ILOM web interface	C120-E574
Integrated Lights Out Manager (ILOM) 3.0 CLI Procedures Guide	Information and procedures for accessing ILOM 3.0 functions using the ILOM CLI	C120-E575
Integrated Lights Out Manager (ILOM) 3.0 SNMP and IPMI Procedure Guide	Information and procedures for accessing ILOM 3.0 functions using SNMP or IPMI management hosts	C120-E579
Integrated Lights Out Manager (ILOM) 3.x Feature Updates and Release Notes	Enhancements that have been made to ILOM firmware since the ILOM 3.0 release	C120-E600
Integrated Lights Out Manager (ILOM) 3.0 Supplement for SPARC Enterprise T5440 Server	How to use the ILOM 3.0 software on the server	C120-E587
External I/O Expansion Unit Installation and Service Manual	Procedures for installing the External I/O Expansion Unit on the SPARC Enterprise T5120/T5140/T5220/T5240/T5440 servers	C120-E543
External I/O Expansion Unit Product Notes	Important and late-breaking information about the External I/O Expansion Unit	C120-E544

Note – Product Notes are available on the website only. Please check for the recent update on your product.

UNIX Commands

This document might not contain information on basic UNIX® commands and procedures such as shutting down the system, booting the system, and configuring devices. Refer to the following for this information:

- Software documentation that you received with your system
- Solaris™ Operating System documentation, which is at

  (http://docs.sun.com)

Text Conventions

Typeface*	Meaning	Examples
AaBbCc123	The names of commands, files, and directories; on-screen computer output	Edit your `.login` file. Use `ls -a` to list all files. `% You have mail.`
AaBbCc123	What you type, when contrasted with on-screen computer output	`% su` `Password:`
AaBbCc123	Book titles, new words or terms, words to be emphasized. Replace command-line variables with real names or values.	Read Chapter 6 in the *User's Guide*. These are called *class* options. To delete a file, type **rm** *filename*.

* The settings on your browser might differ from these settings.

Prompt Notations

The following prompt notations are used in this manual.

Shell	Prompt Notations
C shell	*machine-name*%
C shell superuser	*machine-name*#
Bourne shell and Korn shell	$
Bourne shell and Korn shell superuser	#
ILOM service processor	->
ALOM compatibility shell	sc>
OpenBoot PROM firmware	ok

Conventions for Alert Messages

This manual uses the following conventions to show alert messages, which are intended to prevent injury to the user or bystanders as well as property damage, and important messages that are useful to the user.

Caution – This indicates a hazardous situation that could result in death or serious personal injury (potential hazard) if the user does not perform the procedure correctly.

Caution – This indicates a hazardous situation that could result in minor or moderate personal injury if the user does not perform the procedure correctly. This signal also indicates that damage to the product or other property may occur if the user does not perform the procedure correctly.

Caution – This indicates that surfaces are hot and might cause personal injury if touched. Avoid contact.

Caution – This indicates that hazardous voltages are present. To reduce the risk of electric shock and danger to personal health, follow the instructions.

Tip – This indicates information that could help the user to use the product more effectively.

Alert Messages in the Text

An alert message in the text consists of a signal indicating an alert level followed by an alert statement. A space of one line precedes and follows an alert statement.

Alert message example:

Caution – The following tasks regarding this product and the optional products provided from Fujitsu should only be performed by a certified service engineer. Users must not perform these tasks. Incorrect operation of these tasks may cause malfunction.

Also, important alert messages are shown in "Important Alert Messages" on page xiv.

Notes on Safety

Important Alert Messages

This manual provides the following important alert signals:

Caution – This indicates a hazardous situation could result in minor or moderate personal injury if the user does not perform the procedure correctly. This signal also indicates that damage to the product or other property may occur if the user does not perform the procedure correctly.

Task	Warning
Installation	Deploy the antitilt bar on the equipment rack before beginning an installation. Always load equipment into a rack from the bottom up so that it will not become top-heavy and tip over. The SPARC Enterprise T5440 server weighs approximately 88 lb (40 kg). Two people are required to lift and mount this server into a rack enclosure when using the procedures in this document. When completing a two-person procedure, always communicate your intentions clearly before, during, and after each step to minimize confusion. The weight of the server on extended slide rails can be enough to overturn an equipment rack. Before you begin, deploy the antitilt feature on your cabinet.

Caution – This indicates that hazardous voltages are present. To reduce the risk of electric shock and danger to personal health, follow the instructions.

Task	Warning
Installation	**Electric shock** There is a potential for electric shock if the server and related equipment are not properly grounded.

Product Handling

Maintenance

Caution – Certain tasks in this manual should only be performed by a certified service engineer. User must not perform these tasks. Incorrect operation of these tasks may cause electric shock, injury, or fire.

- Installation and reinstallation of all components, and initial settings
- Removal of front, rear, or side covers
- Mounting/de-mounting of optional internal devices
- Plugging or unplugging of external interface cards
- Maintenance and inspections (repairing, and regular diagnosis and maintenance)

Caution – The following tasks regarding this product and the optional products provided from Fujitsu should only be performed by a certified service engineer. Users must not perform these tasks. Incorrect operation of these tasks may cause malfunction.

- Unpacking optional adapters and such packages delivered to the users
- Plugging or unplugging of external interface cards

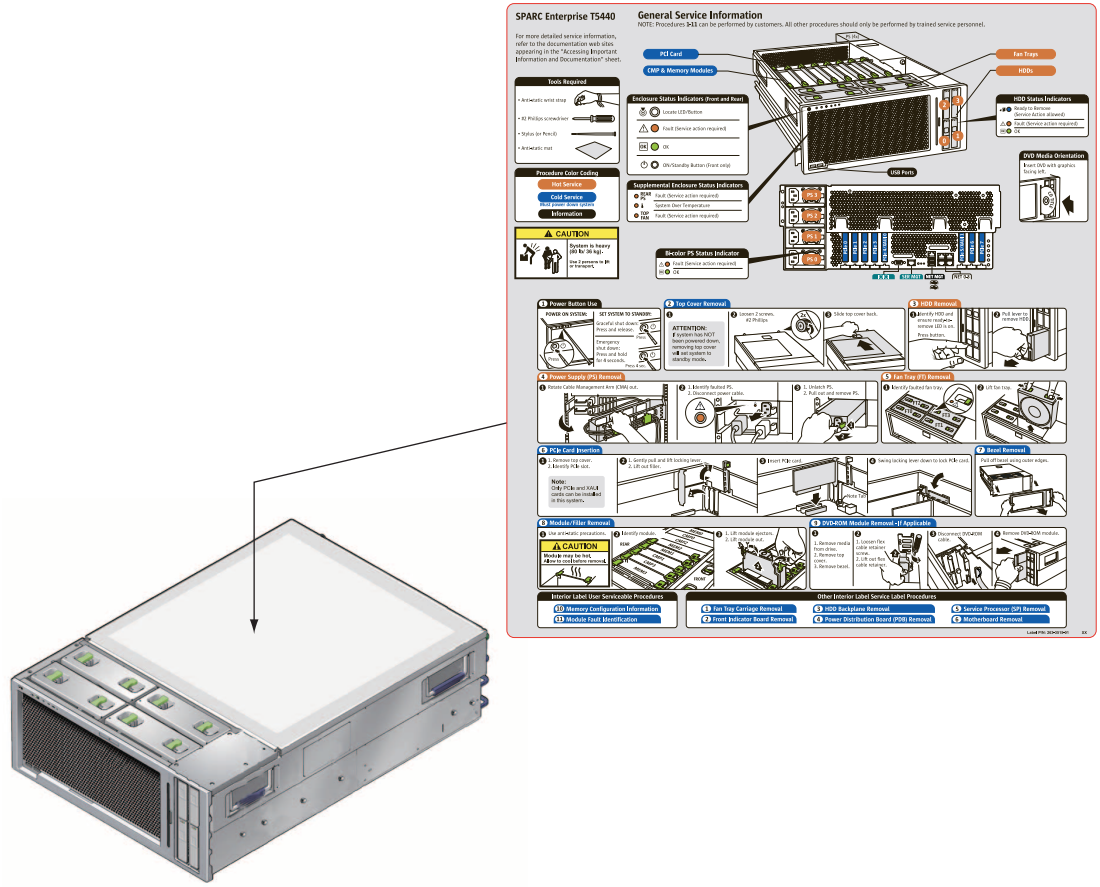
Remodeling/Rebuilding

Caution – Do not make mechanical or electrical modifications to the equipment. Using this product after modifying or reproducing by overhaul may cause unexpected injury or damage to the property of the user or bystanders.

Alert Label

The following is a label attached to this product:

- Never peel off the label.
- The following label provides information to the users of this product.


SPARC Enterprise T5440
General Service Information
NOTE: Procedures 1–11 can be performed by customers. All other procedures should only be performed by trained service personnel.
For more detailed service information, refer to the documentation web sites appearing in the "Accessing Important Information and Documentation" sheet.
Tools Required
Procedure Color Coding
Top Service
Cold Service
Information
CAUTION
PCI Card
CMP & Memory Modules
Fan Trays
HDDs
Enclosure Status Indicators (Front and Rear)
Supplemental Enclosure Status Indicators
Bi-color PS Status Indicator
HDD Status Indicators
DVD Media Orientation
USB Ports
1 Power Button Use
2 Top Cover Removal
3 HDD Removal
4 Power Supply (PS) Removal
5 Fan Tray (FT) Removal
6 PCIe Card Insertion
7 Bezel Removal
8 Module/Filler Removal
9 DVD/DDM Module Removal–If Applicable
Interior Label User Serviceable Procedures
10 Memory Configuration Information
11 Module Fault Identification
Other Interior Label Service Label Procedures
1 Fan Tray Carriage Removal
2 Front Indicator Board Removal
3 HDD Backplane Removal
4 Power Distribution Board (PDB) Removal
5 Service Processor (SP) Removal
6 Motherboard Removal

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(https://download.computers.us.fujitsu.com/)

For Users in Other Countries:

(http://www.fujitsu.com/global/contact/computing/sparce_index.html)

Preparing for Installation

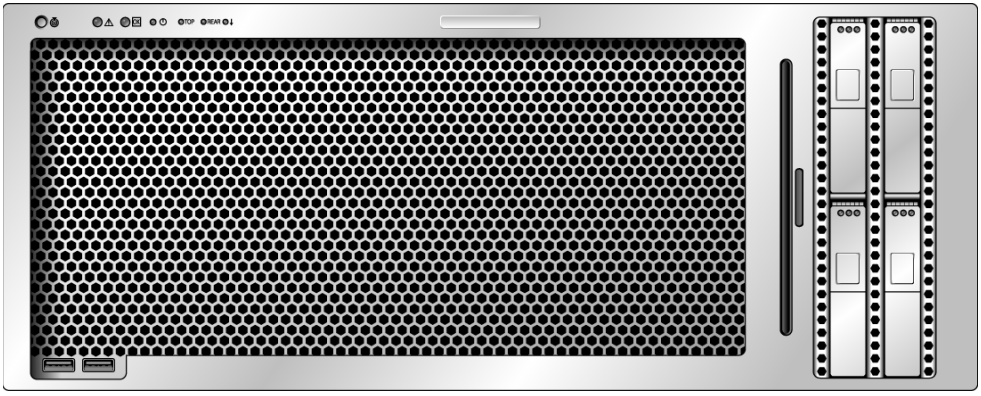
These topics provide background information about the installation procedures that are provided in "Installing the SPARC Enterprise T5440 Server" on page 13.

Topic	Links
Identifying the server	"About the SPARC Enterprise T5440 Server" on page 1
Inventory of tools and equipment required to install the system	"Tools and Equipment Needed" on page 2
Overview of the installation process	"Installation Overview" on page 3
Cables needed to install the system	"Cabling Notes" on page 5
Explanation of the slide rail assembly components	"About the Slide Rail Assembly" on page 7
Explanation of the cable management arm	"About the Cable Management Arm" on page 8
Physical requirements for a compatible rack or equipment cabinet	"Rack Compatibility Requirements" on page 9
Safety precautions to prevent injury during the installation process	"Safety Precautions" on page 10
Electrostatic discharge precautions to prevent damage to equipment during the installation process	"ESD Precautions" on page 11

About the SPARC Enterprise T5440 Server

The SPARC Enterprise T5440 is a 4 rack unit (4U) server (FIGURE: SPARC Enterprise T5440 Server on page 2).

FIGURE: SPARC Enterprise T5440 Server



Related Information

- For data center physical and environmental requirements, see the *SPARC Enterprise T5440 Server Site Planning Guide*.

Tools and Equipment Needed

To install the system, you must have the following tools:

- Long No. 2 Phillips screwdriver
- Cutters or heavy-duty scissors
- Marking pen or tape
- ESD mat and grounding strap

In addition, you must provide a system console device, such as one of the following:

- ASCII terminal
- Workstation
- Terminal server
- Patch panel connected to a terminal server

Related Information

- "Safety Precautions" on page 10
- "ESD Precautions" on page 11

Installation Overview

This installation guide provides procedures that are to be performed in the following order.

1. Verify that you have received all of the components that ship with your server.
2. Gather configuration information for your system. See your system administrator for specific details, including these parameters:
   - Netmask
   - IP address for the service processor
   - Gateway IP address
3. Install any optional components shipped with your system. If you have purchased other optional components such as additional memory, install them prior to mounting the server in a rack. See "Optional Component Installation" on page 5.
4. Mount the server into a rack or cabinet. See "Installing the Rack Slide Assembly" on page 14.

Note – In the rest of this manual, the term *rack* means either an open rack or a closed cabinet.

---

5. Connect the server to a serial terminal or a terminal emulator (PC or workstation) to display system messages. See "Powering On the System for the First Time" on page 32.

Caution – The serial terminal or a terminal emulator should be connected before you connect the power cables. As soon as AC power is connected to the system, the service processor immediately powers on and runs diagnostics. Diagnostic test failures will be printed on the serial terminal. For more information, refer to the *Integrated Lights Out Manager 3.0 Supplement for SPARC Enterprise T5440 Server*.

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6. Connect the data cables to the server, but do not connect the AC power cable yet. See "Connecting the Server Cables" on page 25.
7. Connect the AC power cable to the server and examine the display for any error messages. See "Powering On the System for the First Time" on page 32.

   The service processor runs on the 3.3V standby voltage. As soon as AC power is connected to the system, the service processor immediately powers on, runs diagnostics, and initializes the ILOM firmware.

Caution – There is a potential for electric shock if the server and related equipment are not properly grounded.

8. After the service processor boots, access the ILOM command-line interface (CLI) through the serial management port. See "Log Into the Service Processor Using the Serial Management Port" on page 40.
9. Configure the service processor network addresses. See "Configure the Service Processor Network Management Port" on page 41.

Note – The service processor network management port is not operational until you configure network settings for the service processor (through the service processor serial management port).

10. Commit the changes to the service processor network parameters. See Step 2 in "Power On the System for the First Time" on page 33.
11. Power on the server from a keyboard using the ILOM software. See "Power On the System" on page 45.
12. Configure the Solaris OS. See "Booting the Solaris Operating System" on page 49.

    The Solaris OS is preinstalled on the servers. When you power on, you are automatically guided through the Solaris OS configuration procedure.
13. Install any required patches to the server.

    Refer to the *SPARC Enterprise T5440 Server Product Notes* for a list of required patches.
14. Load additional software from the Solaris media kit (optional).

    The Solaris media kit (sold separately) includes several CDs containing software to help you operate, configure, and administer your server. Refer to the documentation provided with the media kit for a complete listing of included software and detailed installation instructions.

Related Information

- "Tools and Equipment Needed" on page 2
- "Safety Precautions" on page 10
- "ESD Precautions" on page 11
- "Installing the SPARC Enterprise T5440 Server" on page 13
- "Powering On the System" on page 31

Optional Component Installation

The standard components of the server are installed at the factory. However, if you ordered options such as additional memory or PCI cards, these will be shipped separately. If possible, install these components prior to installing the server in a rack.

Note – The list of optional components can be updated without notice. See the product web pages for the most current list of components supported in the server.

Related Information

- If you ordered any options that are not factory-installed, see the *SPARC Enterprise T5440 Server Service Manual* for installation instructions.

Cabling Notes

- Minimum cable connections for the server:
  - At least one system on-board Ethernet network connection (NET port)
  - The service processor serial management port (SER MGT port)
  - The service processor network management port (NET MGT port)
  - Power cables for the system power supplies
- **Service processor management ports:** There are two service processor management ports for use with the ILOM service processor.
  - The service processor serial management port (labeled SER MGT) uses an RJ-45 cable and is always available. This port is the default connection to the ILOM service processor.
  - The service processor network management port (labeled NET MGT) is the optional connection to the ILOM service processor. This port is not available until you configure network settings for the service processor (through the service processor serial management port). See "Enabling the Service Processor Network Management Port" on page 37. The service processor network management port uses an RJ-45 cable for a 10/100 BASE-T connection. This port does not support connections to Gigabit networks.

    See the *SPARC Enterprise T5440 Server Overview Guide* for more information.

- Ethernet ports are labeled NET0, NET1, NET2, and NET3. The Ethernet interfaces operate at 10 Mbps, 100 Mbps, and 1000 Mbps. TABLE: Ethernet Connection Transfer Rates on page 6 shows the transfer rates for the Ethernet ports.

TABLE: Ethernet Connection Transfer Rates

Connection Type	IEEE Terminology	Transfer Rate
Ethernet	10BASE-T	10 Mbit/sec
Fast Ethernet	100BASE-TX	100 Mbits/sec
Gigabit Ethernet	1000BASE-T	1000 Mbit/sec

- TTYA serial port: Use the DB-9 connector with a null modem cable for serial devices. This port appears as `ttya` in Solaris OS and OpenBoot™ PROM messages. This port is not connected to the service processor serial management port.
- USB Ports: USB ports support hot-plugging. You can connect and disconnect USB cables and peripheral devices while the system is running, without affecting system operations.
  - You can only perform USB hot-plug operations while the OS is running. USB hot-plug operations are not supported when the system `ok` prompt is displayed or before the system has completed booting.
  - You can connect up to 126 devices to each of the four USB controllers, for a total of 504 USB devices per system.
- AC power cables: Do not attach power cables to the power supplies until you have finished connecting the data cables, and have connected the server to a serial terminal or a terminal emulator (PC or workstation). The server goes into Standby mode and the ILOM service processor initializes as soon as the AC power cables are connected to the power source. System messages might be lost after 60 seconds if the server is not connected to a terminal, PC, or workstation.

Related Information

- *SPARC Enterprise T5440 Server Site Planning Guide*
- "Safety Precautions" on page 10
- "About the Cable Management Arm" on page 8
- "Rear Panel Cable Connections Reference" on page 27

About the Slide Rail Assembly

The rackmount kit has two *slide rail assemblies*, one for each side of the rack. Each slide rail assembly is marked *LEFT* or *RIGHT*.

Each slide rail assembly consists of a three-section slide rail and a removable inner rail (FIGURE: Rackmount Kit Parts on page 7).

FIGURE: Rackmount Kit Parts

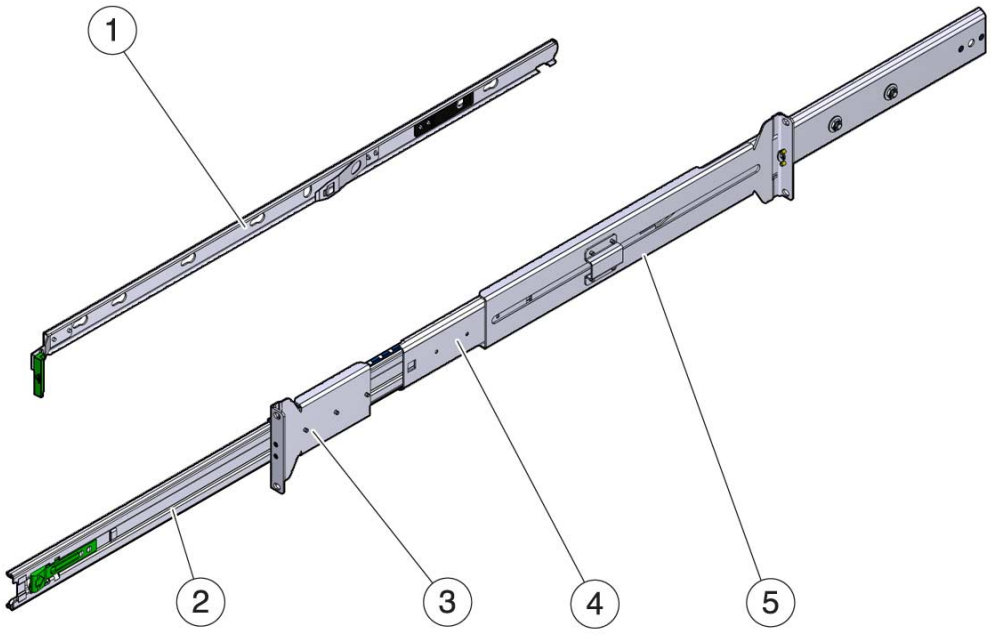


Figure Legend

1	Inner rail
2	Inner slide assembly
3	Front rackmount bracket
4	Outer slide assembly
5	Rear rackmount bracket

- The *inner slide assembly*, *front rackmount bracket*, and *rear rackmount bracket* form the *slide rail assembly*. The inner slide assembly can be extended to allow movement of the server out of the rack.

- The removable *inner rails* are mounted to the right or left side of the server chassis. Each inner rail is marked *RIGHT* or *LEFT*.
- The *outer slide assembly* is mounted to the rack or cabinet. The outer slide assembly includes the front and rear rackmount brackets. The front and rear rackmount brackets have holes for mounting screws, and adjust to fit rack depths from 25 in. (63.5 cm) to 34.25 in. (87 cm).

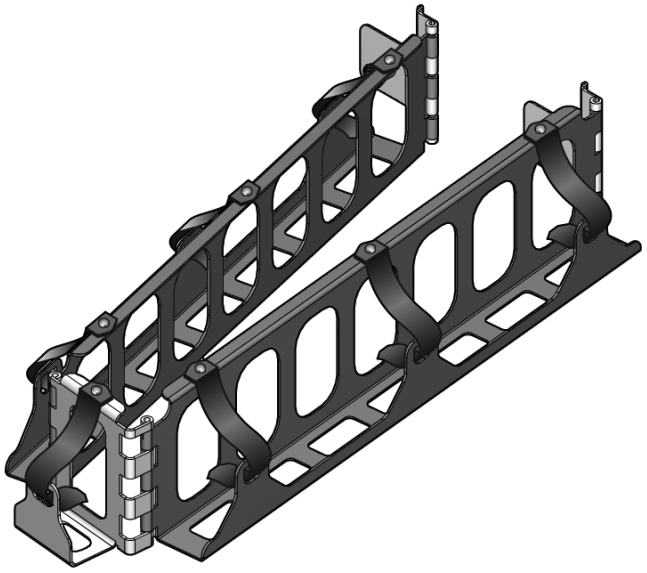
Related Information

- "Tools and Equipment Needed" on page 2
- "About the Cable Management Arm" on page 8
- "Rack Compatibility Requirements" on page 9
- "Installing the Rack Slide Assembly" on page 14
- "Installing the Server Into the Cabinet" on page 19

About the Cable Management Arm

A cable management arm (CMA) attaches to the slide rails and the rear panel of the server. Route cables through the CMA brackets, securing the brackets with the hook-and-loop fasteners.

FIGURE: Cable Management Arm



Related Information

- "Tools and Equipment Needed" on page 2
- "Cabling Notes" on page 5
- "About the Slide Rail Assembly" on page 7
- "Rack Compatibility Requirements" on page 9
- "Installing the Cable Management Arm (CMA)" on page 22
- "Managing Cables With the CMA" on page 29

Rack Compatibility Requirements

The rackmount kit is compatible with equipment racks that meet the following standards:

- Four-post structure (mounting at both front and rear).
- Rack horizontal opening and unit vertical pitch conforming to ANSI/EIA 310-D-1992 or IEC 60927 standards.

- Distance between front and rear mounting planes between 24 to 36 inches (650 mm and 915 mm).
- Minimum clearance depth (to front cabinet door) in front of front rackmount plane: 1 inch (25.4 mm).
- Minimum clearance depth (to rear cabinet door) behind front rackmount plane: 31.5 inches (800 mm) with cable management arm (*recommended*) or 27.5 inches (700 mm) without the cable management arm.
- Minimum clearance width (between structural supports and cable troughs) between front and rear mounting planes: 18 inches (456 mm).

Note – Two-post racks are not compatible.

Related Information

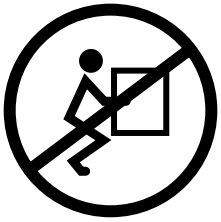
- *SPARC Enterprise T5440 Server Site Planning Guide*
- "Tools and Equipment Needed" on page 2
- "Cabling Notes" on page 5
- "About the Slide Rail Assembly" on page 7
- "About the Cable Management Arm" on page 8
- "Installing the SPARC Enterprise T5440 Server" on page 13

Safety Precautions

Caution – Deploy the antitilt bar on the equipment rack before beginning an installation.

Caution – Always load equipment into a rack from the bottom up so that it will not become top-heavy and tip over.

Caution – The SPARC Enterprise T5440 server weighs approximately 88 lb. (40 kg). Two people are required to lift and mount this server into a rack enclosure when using the procedures in this document.



Caution – When completing a two-person procedure, always communicate your intentions clearly before, during, and after each step to minimize confusion.

Related Information

- *SPARC Enterprise T5440 Server Safety and Compliance Guide*
- "ESD Precautions" on page 11

ESD Precautions

Electronic equipment is susceptible to damage by static electricity. Use a grounded antistatic wriststrap, footstrap, or equivalent safety equipment to prevent electrostatic damage (ESD) when you install or service the servers.

Caution – To protect electronic components from electrostatic damage, which can permanently disable the system or require repair by service technicians, place components on an antistatic surface, such as an antistatic discharge mat, an antistatic bag, or a disposable antistatic mat. Wear an antistatic grounding strap connected to a metal surface on the chassis when you work on system components.

Related Information

- "Safety Precautions" on page 10

Installing the SPARC Enterprise T5440 Server

These topics provide instructions for installing the server into an equipment rack.

Note – If your rackmount kit came with its own instructions, use the instructions in your rackmount kit instead of the instructions in this chapter. After performing the server installation, proceed to "Powering On the System" on page 31 for first-time power on.

Topic	Links
Installing the slide rail assembly	"Installing the Rack Slide Assembly" on page 14
Installing the server into the cabinet and making final adjustments to the slide rail assembly	"Installing the Server Into the Cabinet" on page 19
Installing the cable management arm	"Installing the Cable Management Arm (CMA)" on page 22
Connecting power and data cables to the server	"Connecting the Server Cables" on page 25
Using the cable management arm	"Managing Cables With the CMA" on page 29

Installing the Rack Slide Assembly

Note – Ensure that you have all of the parts in the rackmount kit before you begin the installation of the server.

Task	Links
Attach the inner rails to the server.	"Attach the Inner Rails to the Server" on page 14
Determine which mounting holes to use in the cabinet.	"Determine Rackmount Location" on page 16
Attach the slide rails to the correct location in the cabinet.	"Attach the Slide Rails to the Cabinet" on page 17

Related Information

- *SPARC Enterprise T5440 Server Site Planning Guide*
- "Tools and Equipment Needed" on page 2
- "About the Slide Rail Assembly" on page 7
- "Rack Compatibility Requirements" on page 9
- "Safety Precautions" on page 10
- "Installing the Server Into the Cabinet" on page 19

▼ Attach the Inner Rails to the Server

This procedure describes how to attach the inner rails to the server.

Note – References to "left" or "right" in this procedure assume that you are facing the front of the equipment rack.

1. **Position the inner rail against the server so that the slide-rail lock is at the front. See** FIGURE: Attaching the Inner Glides to the Chassis on page 15**.**

Note – Each inner rail is labeled "left" and "right." Ensure you are attaching the inner rail to the correct side of the server.

FIGURE: Attaching the Inner Glides to the Chassis

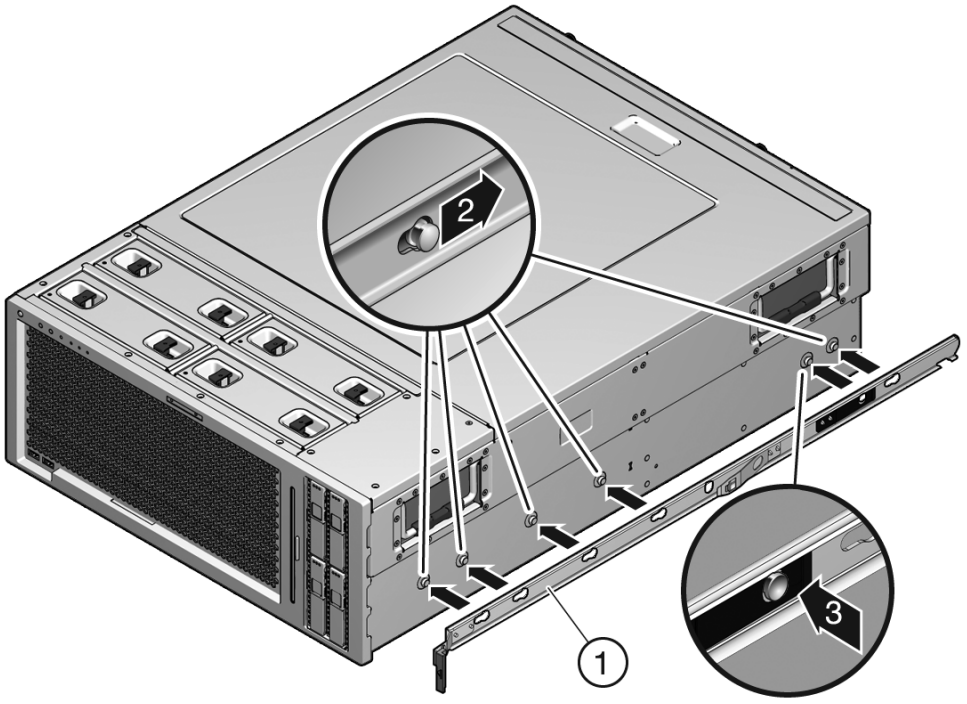


Figure Legend

1	Inner rail
2	Locating pin
3	Locking tab

2. **Align the six keyed openings on the inner rail with the six locating pins on the side of the server.**
3. **Press down on the rear part of the bracket while pushing the bracket toward the rear of the server until the inner rail snaps into place.**
4. **Verify that all six locating pins are trapped in the keyed openings.**
5. **Repeat Steps 1 to 4 to install the remaining inner rail on the other side of the server.**

▼ Determine Rackmount Location

The server is four rack units high. Use the rackmount template shipped with the rackmount kit to determine which mounting holes to use in your cabinet.

Caution – Always load equipment into a rack from the bottom up so that it will not become top-heavy and tip over.

1. **Set the rackmount template above the bottom system mounted in your rack.**
2. **Mark the mounting holes in the cabinet closest to the arrows on the rackmount template.**

   In a rack with three holes per rack unit, the server occupies 12 holes in height per rack column post. See FIGURE: Using the Rackmount Template on page 16.

FIGURE: Using the Rackmount Template

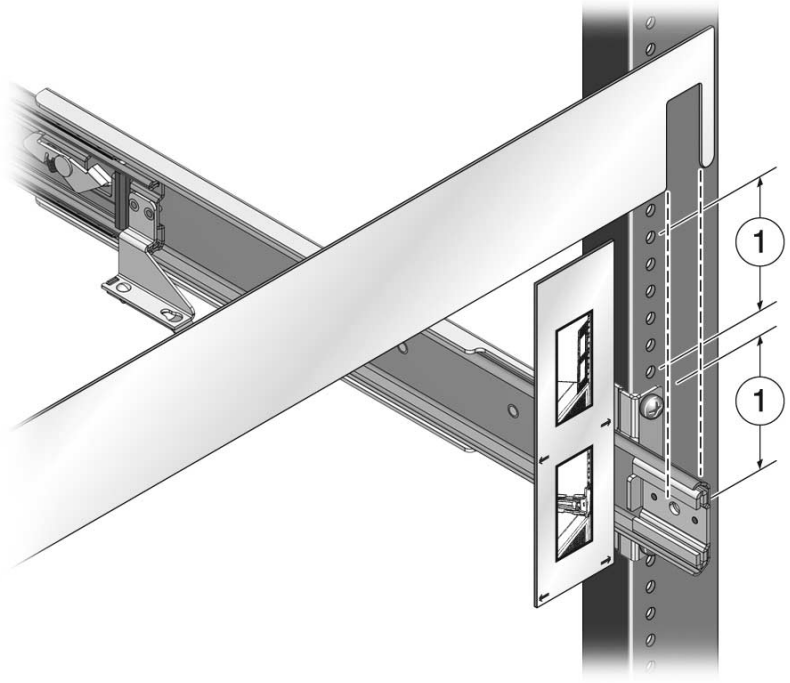


Figure Legend

1	Six mounting holes

Note – If your cabinet is equipped with square (unthreaded) mounting holes, install the threaded mounting clips enclosed with the rackmount kit.

▼ Attach the Slide Rails to the Cabinet

Note – References to “left” or “right” in this procedure assume that you are facing the front of the equipment rack.

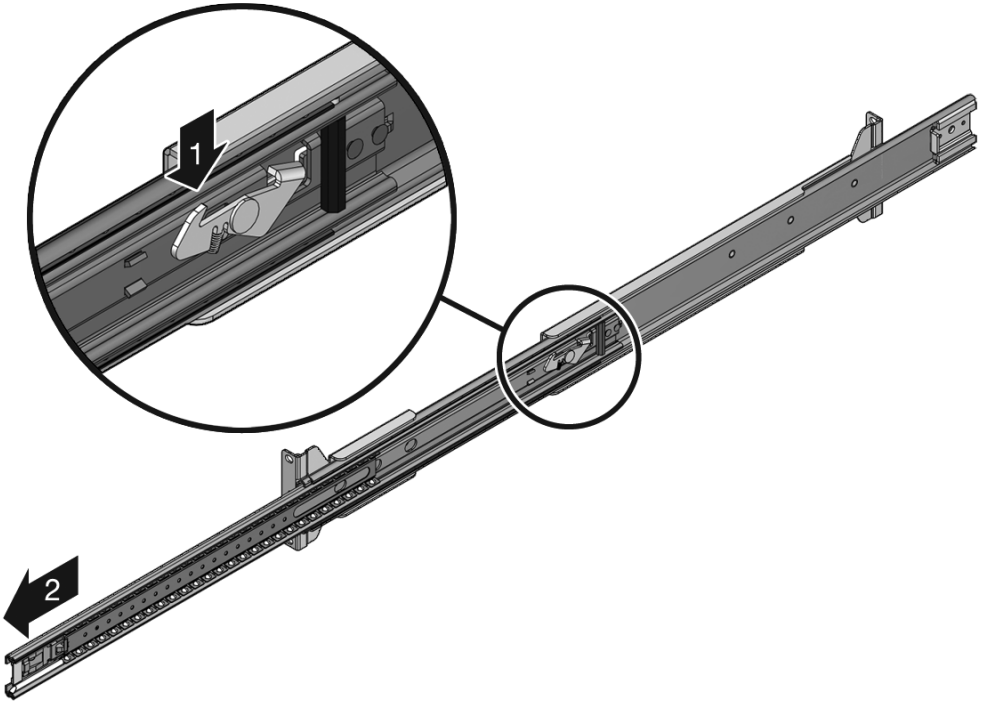
Complete the following tasks:

- “Attach the Inner Rails to the Server” on page 14
- “Determine Rackmount Location” on page 16

1. **Before attaching the slide rails to the rack, fully collapse the inner slide assembly.**

   Slide the inner glide all the way into the slide rail assembly. Release the spring-activated slide-rail lock. See FIGURE: Releasing the Slide Rail Lock on page 18.

FIGURE: Releasing the Slide Rail Lock



2. **Ensure the slide-rail assembly is adjusted to the distance between the front and rear posts of your cabinet.**

Note – Each slide rail is labeled "left" and "right." Ensure you are attaching the slide rail to the correct side of the cabinet.

---

3. **Use the alignment pins to position the outer rails on the front and rear rack posts.**
4. **Install the screws in the front bracket holes.**

   Use the rack rail spacing bracket to align the slide assemblies as you tighten the mounting screws.

Note – The rackmount kit includes both metric and standard fasteners. Use the fasteners appropriate for your cabinet.

---

5. **Ensure each rail is fully recessed into its outer rail.**
6. **Move to the rear of the rack.**

7. **Tighten the left and right bottom screws in the rear of the cabinet.**

   Use the rack rail spacing bracket to align the slide assemblies as you tighten the mounting screws.

Related Information

See "About the Slide Rail Assembly" on page 7 for more information about slide rail assemblies.

Installing the Server Into the Cabinet

Task	Links
Slide the server into the cabinet.	"Install the Server Into the Cabinet" on page 19
Verify proper server installation.	"Verify Proper Slide-Rail Operation" on page 21

Related Information

- *SPARC Enterprise T5440 Server Site Planning Guide*
- "Tools and Equipment Needed" on page 2
- "About the Slide Rail Assembly" on page 7
- "Rack Compatibility Requirements" on page 9
- "Safety Precautions" on page 10

▼ Install the Server Into the Cabinet

The following procedure explains how to insert the server into the cabinet.

Caution – The weight of the server on extended slide rails can be enough to overturn an equipment cabinet. Before you begin, deploy the antitilt feature on your cabinet.

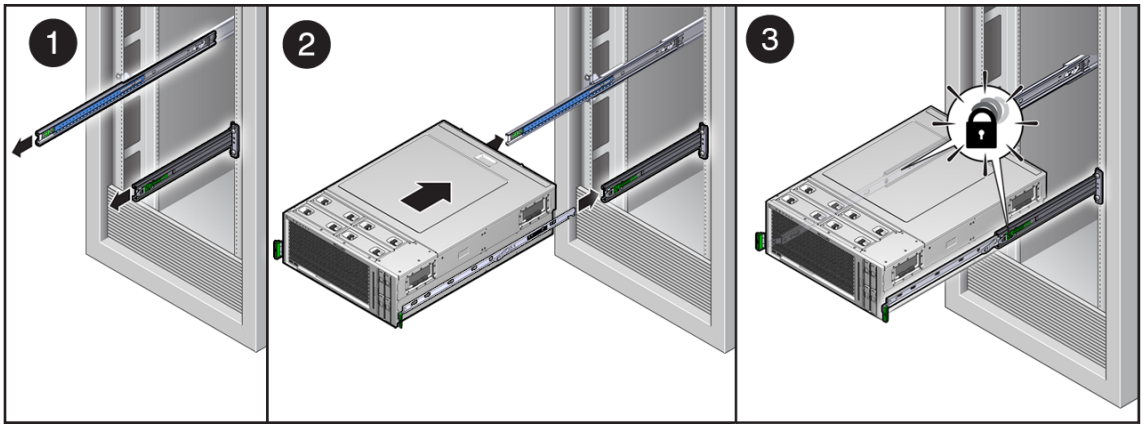
Caution – The server weighs approximately 88 lb. (40 kg). Two people are required to lift and mount the server into a rack enclosure when using the procedures in this chapter.

1. **Slide the inner slide assemblies all the way out from the outer rails until they are locked in the extended position**

   See FIGURE: Inserting the System into the Rack on page 20.

   Ensure the ball bearing retainer is locked all the way forward.

FIGURE: Inserting the System into the Rack



2. **Lift the server up and insert the inner rails into the inner slide assemblies.**

   Ensure the inner rails are horizontal when the inner rails enter the inner slide assemblies.

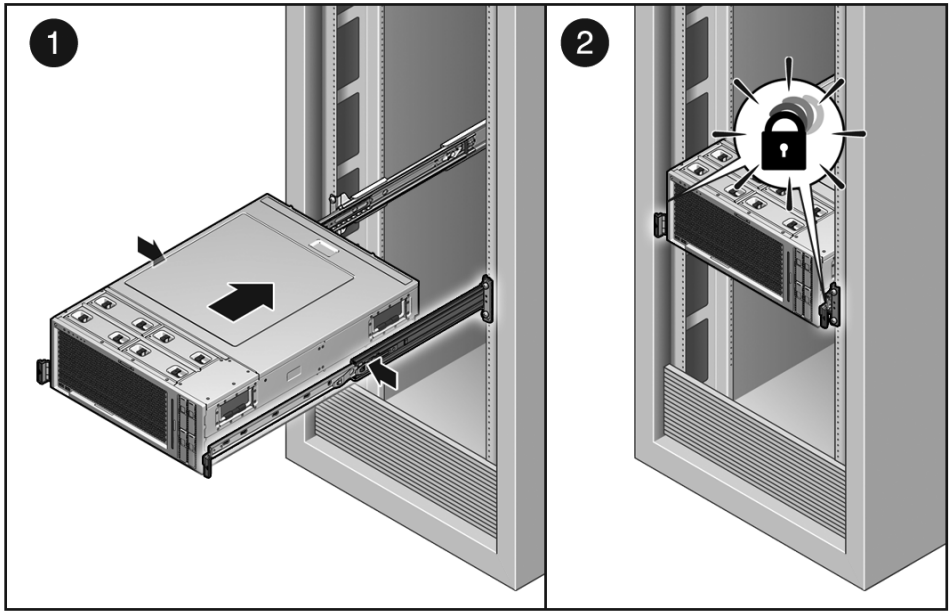
3. **Ensure the inner rails are engaged with the ball-bearing retainers on both inner slide assemblies**

Note – If necessary, support the server with the mechanical lift while aligning the inner rails parallel to the rack-mounted inner slide assemblies.

   The server locks in the extended service position.

4. **Press the inner rail release buttons and slide the server all the way into the cabinet. See** FIGURE: Slide the Server Into the Cabinet on page 21**.**

FIGURE: Slide the Server Into the Cabinet



▼ Verify Proper Slide-Rail Operation

The server should slide smoothly in and out of the cabinet, without contacting any other equipment installed in the cabinet.

1. **Slowly pull the server out of the rack until the server locks in the service position.**
2. **Press the release buttons and push the server back into the rack until the server locks in the operational position.**

Related Information

See "About the Slide Rail Assembly" on page 7 for more information about slide rail assemblies.

To install or replace internal parts in the server, you must first remove the server from the rack. For the removal procedure, refer to the *SPARC Enterprise T5440 Server Service Manual*.

Installing the Cable Management Arm (CMA)

The CMA kit includes the following:

- CMA
- CMA support strut

Caution – You can damage the I/O and power cables if you slide the system from the rack without first running all cables at the rear through the CMA.

Task	Links
Attach the CMA support strut to the cable management arm.	"Attach the CMA Support Strut" on page 22
Attach the CMA to the server back panel and to the cabinet.	"Attach the CMA" on page 23

Related Information

- *SPARC Enterprise T5440 Server Site Planning Guide*
- "Tools and Equipment Needed" on page 2
- "About the Slide Rail Assembly" on page 7
- "Rack Compatibility Requirements" on page 9
- "Safety Precautions" on page 10

▼ Attach the CMA Support Strut

Note – References to "left" or "right" in this procedure assume that you are standing behind the equipment rack and looking at the rear of the server.

Before you begin, complete the following tasks:

- "Installing the Rack Slide Assembly" on page 14
- "Installing the Server Into the Cabinet" on page 19

Do the following:

1. **Attach one end of the CMA support strut to the lefthand slide rail.**
2. **Attach the other end of the CMA support strut to the righthand inner rail.**
3. **Slide the server in and out of the cabinet to ensure that the CMA support strut is operating correctly.**

▼ Attach the CMA

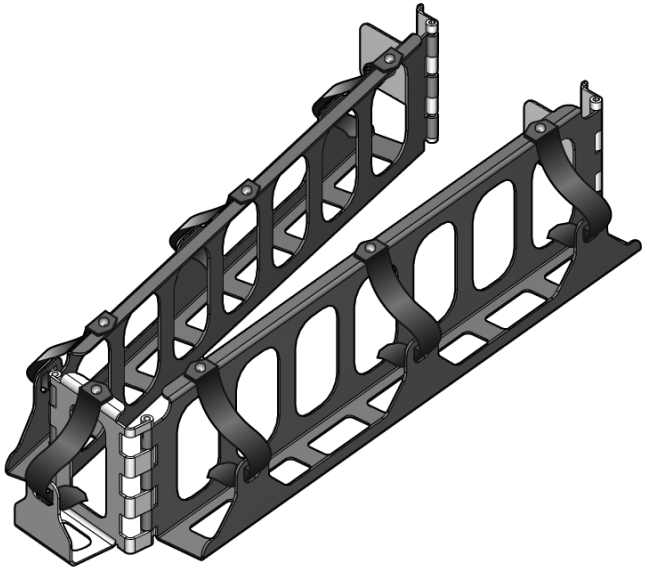
Note – References to "left" or "right" in this procedure assume that you are standing behind the equipment rack and looking at the rear of the server.

Complete the following tasks:

- "Installing the Rack Slide Assembly" on page 14
- "Installing the Server Into the Cabinet" on page 19
- "Attach the CMA Support Strut" on page 22

1. **If necessary, slide the server back until it reaches the internal stops.**
2. **Fold the CMA as shown in** FIGURE: Folding the CMA on page 23**.**

FIGURE: Folding the CMA



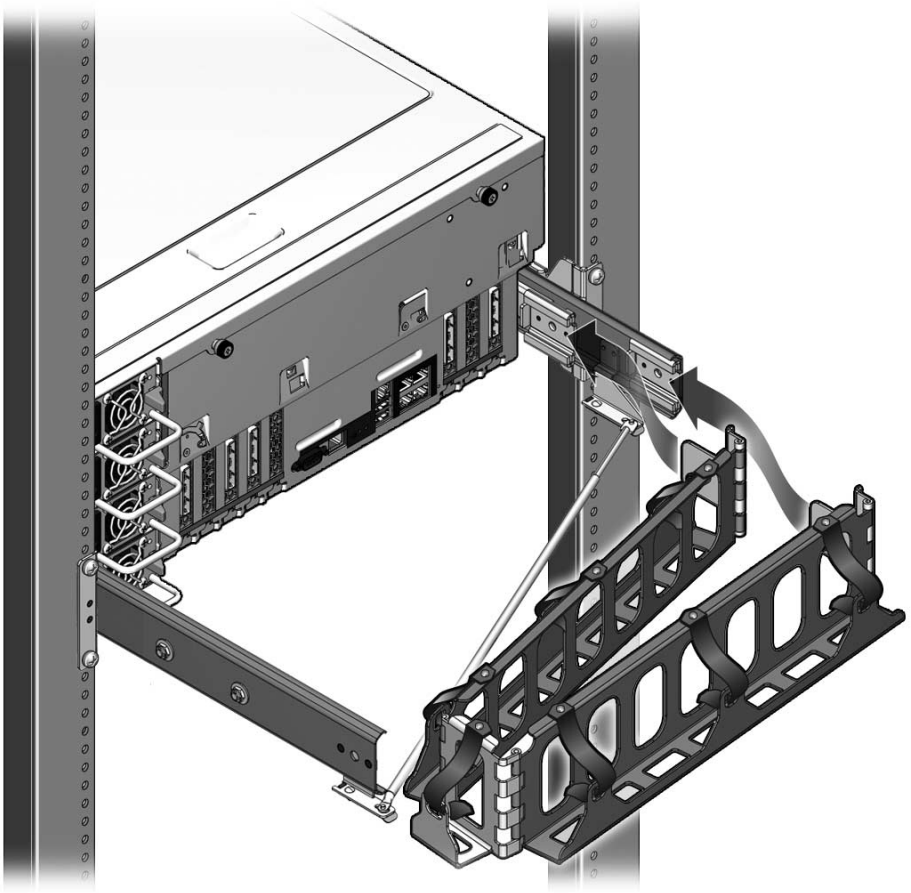
3. **Insert the CMA hinge plate into the outer rail (see** FIGURE: Attaching the Cable Management Arm on page 24**).**

   Slide the hinge plate into the end of the outer rail until the retaining pin snaps into place.

4. **Mount the other end of the CMA to the inner rail (see** FIGURE: Attaching the Cable Management Arm on page 24**).**

   Slide the CMA into the end of the inner rail until the retaining pin snaps into place.

FIGURE: Attaching the Cable Management Arm



Connecting the Server Cables

To boot the server, you must connect and configure the network management and serial management ports. The servers also have serial and USB ports available for connections to optional devices.

When you are finished connecting the cables to the server, ensure that the server can slide smoothly in and out of the rack without binding or damaging the cables.

Task	Links
Connect the serial management port.	"Connect the Service Processor Serial Management Port" on page 25
Connect the network management port.	"Connect the Service Processor Network Management Port" on page 26
Connect Ethernet network cables to the server.	"Connect the Ethernet Network Cables" on page 27
Connect the AC power cables to the server.	"Connect the AC Power Cables to the Server" on page 27

Related Information

- "Safety Precautions" on page 10
- "ESD Precautions" on page 11
- "Rear Panel Cable Connections Reference" on page 27
- "Verify Proper Slide-Rail Operation" on page 21
- "Powering On the System for the First Time" on page 32

▼ Connect the Service Processor Serial Management Port

The service processor serial management port is marked SER MGT. See FIGURE: Server Rear Panel Connections on page 28 for connector locations.

Note – The cable and DB-9 RJ-45 adapters are for the host serial port, and not for the service processor serial management port.

- **Connect a Category 5 cable from the service processor serial management port to the terminal device.**

  Use this port for initial server management. This port is needed to set up the service processor network management port, as detailed in "Enabling the Service Processor Network Management Port" on page 37.

  When connecting either a DB-9 or a DB-25 cable, use an adapter to perform the crossovers given for each connector.

Note – Use the service processor serial management port *only* for server management. It is the default connection between the service processor and a terminal or a computer.

Caution – Do not attach a modem to the service processor serial management port.

▼ Connect the Service Processor Network Management Port

- **Connect a Category 5 cable from the service processor network management port to your network switch or hub. See** FIGURE: Server Rear Panel Connections on page 28 **for connector locations.**

  The service processor network management port is labeled NET MGT. This port is not operational until you configure the network settings (through the serial management port), as detailed in "Configure the Service Processor Network Management Port" on page 41.

  If you have access to a DHCP server on the network, you can see the service processor get an IP address because the DHCP client is enabled by default.

Note – The service processor network management port is configured by default to retrieve network settings with Dynamic Host Configuration Protocol (DHCP) and allow connections using Solaris Secure Shell (SSH). You might need to modify these settings for your network. Instructions are given in "Powering On the System" on page 31.

▼ Connect the Ethernet Network Cables

The server has four network connectors, marked NET0, NET1, NET2, and NET3. These connectors are RJ-45 Gigabit Ethernet. See FIGURE: Server Rear Panel Connections on page 28 for connector locations.

Note – If a 10 GBit Ethernet (XAUI) card is installed in the system, the corresponding Ethernet port is disabled. For example, if a XAUI card is installed at XAUI0, the NET0 port is disabled.

---

1. **Connect a Category 5 cable from your network switch or hub to Ethernet Port 0 (NET0) on the rear of the chassis.**
2. **Connect Category 5 cables from your network switch or hub to the remaining Ethernet ports (NET1, NET2, NET3), as needed.**

▼ Connect the AC Power Cables to the Server

Caution – Finish the hardware procedures in this chapter, but do not attach the AC power cables to a power source yet.

Powering on the system for the first time requires special preparation and procedures. For example, if you have not prepared a display before connecting the AC power cable, system messages could be lost.

Caution – The server goes into Standby mode and the service processor initializes as soon as the AC power cable is connected to the power source.

- **Go to "Powering On the System for the First Time" on page 32 for instructions on connecting the server to AC power.**

Rear Panel Cable Connections Reference

See FIGURE: Server Rear Panel Connections on page 28 for the locations of the ports on the SPARC Enterprise T5440 server.

FIGURE: Server Rear Panel Connections

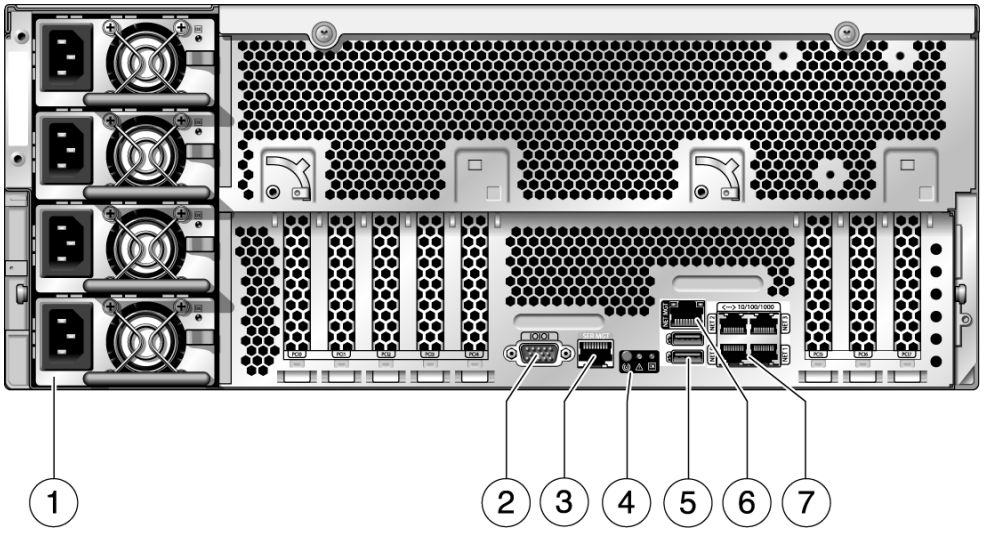


Figure Legend

1	Power supply connectors	**5**	USB ports
2	Serial port (DB-9)	**6**	Service processor network management port
3	Service processor serial management port	**7**	Gigabit Ethernet ports
4	Rear panel status indicators	**8**	

Note – You must follow the proper sequence when connecting cables to the server.

Related Information

- "Cabling Notes" on page 5
- "Safety Precautions" on page 10
- "ESD Precautions" on page 11

Managing Cables With the CMA

Task	Links
Secure the cables in the CMA.	"Secure the Server Cables in the CMA" on page 29

Related Information

- "Rear Panel Cable Connections Reference" on page 27
- "About the Cable Management Arm" on page 8
- "Installing the Cable Management Arm (CMA)" on page 22

▼ Secure the Server Cables in the CMA

1. **Once the server cables are connected and placed inside the CMA, secure the cables inside the CMA cable hook and loop fasteners.**
2. **Verify the operation of the slide rails and CMA, and cable fasteners.**

   Slide the server in and out of the cabinet to ensure that the server is operating smoothly, and that the cables are not binding or getting tangled.

Powering On the System

This section includes instructions for booting the server and for enabling the service processor network management port.

Topic	Links
Connecting the AC power cords to a power source	"Powering On the System for the First Time" on page 32
Configuring and enabling the network management port for remote administration	"Enabling the Service Processor Network Management Port" on page 37
Logging into the service processor	"Logging Into the Service Processor" on page 39
Powering on, powering off, and rebooting remotely using the service processor	"Using the Service Processor for Common Operations" on page 45
Booting the Solaris OS, and configuring the system to not boot into the Solaris OS.	"Booting the Solaris Operating System" on page 49

Related Information

- "Preparing for Installation" on page 1
- "Installing the SPARC Enterprise T5440 Server" on page 13

Powering On the System for the First Time

This section provides an overview and instructions for powering on your system the first time.

Topic	Links
Learn about the ILOM interface.	"About the ILOM System Console" on page 32
Learn about the role of the ILOM service processor during power-on.	"About the ILOM Service Processor" on page 33
Perform first time power-on.	"Power On the System for the First Time" on page 33
Learn about the default Solaris OS image.	"Solaris OS Host Configuration Reference" on page 36

Related Information

- *SPARC Enterprise T5440 Server Administration Guide*
- *Integrated Lights Out Manager 3.0 Concepts Guide*
- *Integrated Lights Out Manager 3.0 Supplement for SPARC Enterprise T5440 Server*

About the ILOM System Console

When you power on the system, the boot process begins under the control of the Integrated Lights Out Manager (ILOM) system console. The system console displays status and error messages generated by firmware-based tests during system startup.

To see these status and error messages, connect a terminal or terminal emulator to the serial management port (SER MGT). For a basic procedure to connect a terminal or terminal emulator, see "Power On the System for the First Time" on page 33.

Related Information

- *Integrated Lights Out Manager 3.0 Concepts Guide*
- *Integrated Lights Out Manager 3.0 Supplement for SPARC Enterprise T5440 Server*
- *SPARC Enterprise T5440 Server Administration Guide*

- "Logging Into the Service Processor" on page 39

About the ILOM Service Processor

After the system console finishes its low-level system diagnostics, the ILOM service processor initializes and runs a higher level of diagnostics. When you access the ILOM service processor using a device connected to the serial management port, you see the output of the ILOM diagnostics.

By default, the service processor configures the network management port automatically, retrieving network configuration settings using the Dynamic Host Configuration Protocol (DHCP) and allowing connections using Secure Shell (SSH).

Note – If you are unable to use DHCP on your network, you must connect to the ILOM service processor using the serial management port to configure the network management port for your network. See "Configure the Service Processor Network Management Port" on page 41.

Related Information

- *SPARC Enterprise T5440 Server Service Manual*
- *Integrated Lights Out Manager 3.0 Supplement for SPARC Enterprise T5440 Server*
- "Rear Panel Cable Connections Reference" on page 27
- "Enabling the Service Processor Network Management Port" on page 37
- "Logging Into the Service Processor" on page 39
- "Using the Service Processor for Common Operations" on page 45

▼ Power On the System for the First Time

Complete the following tasks:

- Confirm that you have completed the installation of the server in its rack. See "Installing the Server Into the Cabinet" on page 19.
- Attach the cable management arm. See "Installing the Cable Management Arm (CMA)" on page 22.

1. **Connect a terminal or a terminal emulator (PC or workstation) to the service processor serial management port.**

   Configure the terminal or terminal emulator with these settings:

   - 9600 baud

- 8 bits
- No parity
- 1 Stop bit
- No handshake

  A null modem configuration is needed, meaning the transmit and receive signals are reversed (crossed over) for DTE to DTE communications. You can use the supplied RJ-45 crossover adapters with a standard RJ-45 cable to achieve the null modem configuration.

Note – When you power on the server for the first time and you do not have a terminal or terminal emulator (PC or workstation) connected to the service processor serial management port, you will not see system messages.

---

2. **(Optional) Connect an Ethernet cable between the server's Net MGT port (**FIGURE: Server Rear Panel Connections on page 28**) and the network to which future connections to the SP and host will be made.**

   After the initial configuration of the system using the SP SER MGT port, communication with the SP and host is usually performed through this Ethernet interface.

3. **Connect an Ethernet cable between one of the server's NET ports (**FIGURE: Server Rear Panel Connections on page 28**) and the network to which the server will communicate.**

Note – If a 10 GBit Ethernet (XAUI) card is installed in the system, the corresponding Ethernet port is disabled. For example, if a XAUI card is installed at XAUI0, the NET0 port is disabled.

---

4. **Plug the power cords into the power supplies and into a power source.**

Note – Only two power connections are required for operation. Use four power connections and two separate circuits for redundancy.

The service processor runs on the 3.3V standby voltage. As soon as AC power is connected to the system, the service processor powers on, runs diagnostics, and initializes the ILOM firmware.

After a few minutes, the SP login prompt appears on the terminal device. The host is not initialized or powered on yet.

5. **At the terminal device, log in to the SP as `root` with a password of `changeme`.**

```
XXXXXXXXXXXXXXXX login: root
Password: changeme
. . .
->
```

After a brief delay, the SP prompt is displayed (->). At this point, there are many commands you can perform using the Integrated Lights Out Manager interface.

Additional SP information, such as how to change the password and how to set up the SP network parameters is available in the online documentation set.

6. **Power on the server and redirect the host output to display on the serial terminal device:**

```
-> start /SYS
Are you sure you want to start /SYS (y/n)? y
-> start /SP/console
Are you sure you want to start /SP/CONSOLE (y/n)? y
Serial console started. To stop, type #.
. . .
```

After you start the SP console, the server initialization takes approximately 20 minutes to complete.

7. **When prompted, follow the onscreen instructions for configuring the Solaris Operating System on your host and enter the following configuration information.**

You will be prompted to confirm the configuration several times, enabling confirmation and changes. If you are not sure how to respond to a particular value, you can accept the default, and make future changes when the Solaris OS is running. See TABLE: Reference for Solaris OS Configuration on page 36 for a description of the Solaris OS parameters you must provide during initial configuration.

8. **Log in to the server and explore its capabilities.**

There are many commands you can use to verify the functionality of the system. The following list describes a few of them:

- `showrev` – Displays the hostname and system architecture information. Use the `-a` option with this command to see the patches that are installed.
- `psrinfo` – Displays information about the number and status of the processors and cores in the host.
- `prtdiag` – Displays system configuration and diagnostic information.

Review the Solaris OS man pages and documentation for more details.

Solaris OS Host Configuration Reference

TABLE: Reference for Solaris OS Configuration on page 36 describes configuration parameters you must provide during initial Solaris OS configuration.

TABLE: Reference for Solaris OS Configuration

Parameter	Description
Language	Select a number from the displayed language list.
Locale	Select a number from the displayed locale list.
Terminal Type	Select a terminal type that corresponds with your terminal device.
Network?	Select Yes.
Multiple Network Interfaces	Select the network interfaces that you plan to configure. If you are not sure, select the first one in the list.
DHCP?	Select Yes or No according to your network environment.
Host Name	Enter the host name for the server.
IP Address	Enter the IP address for this Ethernet interface.
Subnet?	Select Yes or No according to your network environment.
Subnet Netmask	(If subnet was Yes) Enter the netmask for the subnet for your network environment.
IPv6?	Specify whether or not to use IPv6. If you are not sure, select No to configure the Ethernet interface for IPv4.
Security Policy	Select either standard UNIX security (No) or Kerberos Security (Yes). If you are not sure, select No.
Confirm	Review the onscreen information and change it if needed. Otherwise, continue.
Name Service	Select the name service according to your network environment. Note–If you select a name service other than None, you will be prompted for additional name service configuration information.
NFSv4 Domain Name	Select the type of domain name configuration according to your environment. If you are not sure, select `Use the NFSv4 domain derived by the system`.
Time Zone (Continent)	Select your continent.
Time Zone (Country or Region)	Select your country or region.
Time Zone	Select the time zone.
Date and Time	Accept the default date and time or change the values.
root Password	Enter the `root` password twice. This password is for the superuser account for the Solaris OS on this server. This password is not the SP password.

Related Information

- *SPARC Enterprise T5440 Server Administration Guide*.
- "Rear Panel Cable Connections Reference" on page 27
- "Enabling the Service Processor Network Management Port" on page 37
- "Logging Into the Service Processor" on page 39
- "Using the Service Processor for Common Operations" on page 45
- "Booting the Solaris Operating System" on page 49

Enabling the Service Processor Network Management Port

The service processor network management port is not operational unless your network employs DHCP, in which case the configuration in automatic.

Task	Links
Enable the service processor network management port.	"Enable the Service Processor Network Management Port in a Network Using DHCP" on page 38 "Enable the Service Processor Network Management Port with a Static IP Address" on page 38

Related Information

- "Logging Into the Service Processor" on page 39
- "Using the Service Processor for Common Operations" on page 45
- "Rear Panel Cable Connections Reference" on page 27

▼ Enable the Service Processor Network Management Port in a Network Using DHCP

- **If your network uses DHCP, you can run this command**

```
-> show /SP/network
```

to view your server's network configuration information. For example,

```
-> show /SP/network

  /SP/network
     Targets:

     Properties:
         commitpending = (Cannot show property)
         dhcp_server_ip = 10.8.31.5
         ipaddress = 10.8.31.188
         ipdiscovery = dhcp
         ipgateway = 10.8.31.248
         ipnetmask = 255.255.252.0
         macaddress = 00:14:4F:7E:83:4F
         pendingipaddress = 10.8.31.188
         pendingipdiscovery = dhcp
         pendingipgateway = 10.8.31.248
         pendingipnetmask = 255.255.252.0
         state = enabled

     Commands:
         cd
         set
         show
```

▼ Enable the Service Processor Network Management Port with a Static IP Address

If your network does *not* use DHCP, the network management port is not operational until you configure network settings for the service processor. Configure the service processor in this order:

1. **After the service processor boots, access the ILOM CLI through the serial management port. See** "Log Into the Service Processor Using the Network Management Port" on page 44**.**

2. **Configure the service processor. See** "Configure the Service Processor Network Management Port" on page 41**.**

3. **Commit the changes to the service processor parameters. See** Step 4 **in** "Configure the Service Processor Network Management Port" on page 41**.**

Next Steps

You can now use the network management port at any time to access the service processor. See "Log Into the Service Processor Using the Network Management Port" on page 44.

Logging Into the Service Processor

If you are powering on the system for the first time after installation, use the service processor serial port to power on the system and run POST. See "Log Into the Service Processor Using the Serial Management Port" on page 40.

If the network management port has already been configured, you can use it instead of the serial management port. See "Log Into the Service Processor Using the Network Management Port" on page 44.

Task	Links
Use the Serial Management Port for initial configuration.	"Log Into the Service Processor Using the Serial Management Port" on page 40
Configure the Network Management Port to manage the system remotely using an Ethernet connection.	"Configure the Service Processor Network Management Port" on page 41
Log into the service processor using the Network Management Port.	"Log Into the Service Processor Using the Network Management Port" on page 44

Related Information

- "About the ILOM Service Processor" on page 33
- *SPARC Enterprise T5440 Server Administration Guide*
- *Integrated Lights Out Manager 3.0 Supplement for SPARC Enterprise T5440 Server*

▼ Log Into the Service Processor Using the Serial Management Port

After the service processor boots, access the ILOM CLI to configure and manage the system. The ILOM CLI prompt (->) is displayed at the first time the service processor is booted. The default configuration provides an ILOM CLI `root` user account. The default `root` password is *changeme*. Change the password using the service processor ILOM CLI `password` command.

1. **If this is the first time the system has been powered on, use the** `password` **command to change the** `root` **password.**

```
...
Starting OpenBSD Secure Shell server: sshd.
Starting Servicetags listener: stlistener.
Starting FRU update program: frutool.

hostname login: root
Password: changeme

...
Federal Acquisitions: Commercial Software -- Government Users
Subject to Standard License Terms and Conditions.
...

Warning: password is set to factory default.

-> set /SP/users/root password
Enter new password: ********
Enter new password again: ********

->
```

Note – After the `root` password has been set, on subsequent reboots, the ILOM CLI login prompt is displayed.

---

2. **Enter** `root` **for the login name followed by your password.**

```
...
hostname login: root
Password: password (nothing displayed)
Waiting for daemons to initialize...

Daemons ready
```

```
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->
```

▼ Configure the Service Processor Network Management Port

Note – If your network allows the use of DHCP, this configuration is performed automatically the first time you boot the system.

Use this procedure only when:

- You are unable to use DHCP on your network.
- You need to modify the ILOM service processor network management port settings.

In this procedure, you connect to the ILOM service processor using the serial management port to manually reconfigure the network management port.

Note – For more information on configuring ILOM, refer to the *Integrated Lights Out Manager 3.0 Supplement for SPARC Enterprise T5440 Server*

---

1. **Set these network parameters according to the specific details of your network configuration:**
   - `/SP/network state` – Specifies whether the service processor is on the network or not
   - `/SP/network pendingipaddress` – IP address of the service processor
   - `/SP/network pendingipgateway` – IP address of the gateway for the subnet
   - `/SP/network pendingipnetmask` – Netmask for the service processor subnet
   - `/SP/network pindingipdiscovery` - Specifies whether the service processor uses DHCP or static IP address assignment
   - `/SP/network commitpending` - Commits the service processor to use the pending settings

   Configure these parameters with the `set` command. The usage is as follows: `set` *target property=value* where `/SP/network` is the target and `pendingipaddress=`*xxx.xxx.xxx.xxx*, for example, is the *property=value*.

2. **Configure the service processor using information from your network administrator.**

   Your choices are:

   - `dhcp` - Set up the network connection with a dynamically created IP configuration.
   - `static` - Set up the network connection with a static IP configuration.

   a. If you choose to use a dynamically created IP address (use DHCP to retrieve the network setting), set `pendingipdiscovery` **to** `dhcp`**.**

```
-> set /SP/network pendingipdiscovery=dhcp
Set 'pendingipdiscovery' to 'dhcp'
```

   b. If you choose to configure a static IP configuration. set the parameters `pendingipdiscovery`**,** `pendingipaddress`**,** `pendingipgateway`**, and** `pendingipnetmask` **as follows.**

   i. Set the service processor

```
-> set /SP/network pendingipdiscovery=static
Set 'pendingipdiscovery' to 'static'
```

   ii. to accept a static IP address.

   iii. Set the IP address for the service processor.

```
-> set /SP/network pendingipaddress=service-processor-IPaddr
Set 'pendingipaddress' to 'service-processor-IPaddr'
```

   iv. Set the IP address for the service processor gateway.

```
-> set /SP/network pendingipgateway=gateway-IPaddr
Set 'pendingipgateway' to 'gateway-IPaddr'
```

   v. Set the netmask for the service processor.

```
-> set /SP/network pendingipnetmask=255.255.255.0
Set 'pendingipnetmask' to '255.255.255.0'
```

   This example uses `255.255.255.0` to set the netmask. Your network environment subnet might require a different netmask. Use a netmask number most appropriate to your environment.

3. **Use the** `show /SP/network` **command to verify that the parameters were set correctly.**

   The following example shows parameters that have been set to convert a service processor from a dhcp configuration to a static configuration

```
-> show /SP/network
  /SP/network
     Targets:
     Properties:
          commitpending = (Cannot show property)
          dhcp_server_ip = xxx.xxx.xxx.xxx
          ipaddress = xxx.xxx.xxx.xxx
          ipdiscovery = dhcp
          ipgateway = xxx.xxx.xxx.xxx
          ipnetmask = 255.255.252.0
          macaddress = 00:14:4F:3F:8C:AF
          pendingipaddress = xxx.xxx.xxx.xxx
          pendingipdiscovery = static
          pendingipgateway = xxx.xxx.xxx.xxx
          pendingipnetmask = 255.255.255.0
          state = enabled
     Commands:
          cd
          set
          show
->
```

Note – After setting the configuration parameters, you must enter the `set /SP/network commitpending=true` command for the new values to take affect.

---

4. **Commit the changes to the service processor network parameters.**

```
-> set /SP/network commitpending=true
Set 'commitpending' to 'true'
```

Note – You can run the `show /SP/network` command again (after performing the `set /SP/network commitpending=true` command) to verify that the parameters have been updated.

▼ Log Into the Service Processor Using the Network Management Port

Note – You must configure the service processor parameters shown in "Configure the Service Processor Network Management Port" on page 41 before you can use the network management port.

- **Open an SSH session and connect to the service processor by specifying its network address.**

```
% ssh root@xx.xxx.xx.x
...
Are you sure you want to continue connecting (yes/no)? yes
...
Password:  password (nothing displayed)
Waiting for daemons to initialize...

Daemons ready

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->
```

Using the Service Processor for Common Operations

Task	Links
Power on the system remotely.	"Power On the System" on page 45
Connect to the system console.	"Connect to the System Console" on page 47
Initialize the system from the -> prompt.	"Perform a Normal System Initialization" on page 47
Boot the Solaris OS.	"Boot the Solaris Operating System" on page 49
Configure the system to power on without initializing the Solaris OS.	"Avoid Booting the Solaris Operating System at Start Up" on page 50
Reset the system from the -> prompt.	"Reset the System" on page 50
Power cycle the system remotely from the -> prompt.	"Power Cycle the System" on page 50

Related Information

- "About the ILOM System Console" on page 32
- *SPARC Enterprise T5440 Server Administration Guide*

▼ Power On the System

1. **Perform the following steps to verify that there are no faults:**

   a. **Set the virtual keyswitch to `diag` mode so that POST will run in Service mode.**

```
-> set /SYS keyswitch_state=diag
Set 'keyswitch_state' to 'diag'
```

b. To initiate the power on sequence, type the `start /SYS` command.

You will see an ILOM CLI alert message on the system console. This message indicates that the system has reset.

```
-> start /SYS
Are you sure you want to start /SYS (y/n)? y
Starting /SYS

->
```

c. Switch to the system `console` to view POST output.

```
-> start /SP/console
Are you sure you want to start /SP/console (y/n)? y
Serial console started.  To stop, type #.
.
.
.
```

Watch the POST output for possible fault messages. The following output is a sign that POST did not detect any faults:

```
.
.
.
2007-12-14 16:34:53.385 0:1:0>INFO:
2007-12-14 16:34:53.391 0:1:0>  POST Passed all devices.
2007-12-14 16:34:53.399 0:1:0>POST:     Return to VBSC.
2007-12-14 16:34:53.406 0:1:0>Master set ACK for vbsc runpost
command and spin.
...
SPARC Enterprise T5440, No Keyboard
...
OpenBoot 4.27.x, 3968 MB memory available, Serial #74409918.
Ethernet address 0:14:4f:6f:67:be, Host ID: 846f67be.


{8} ok
```

2. Type the console escape sequence (by default `#.` (Hash-Period)) to return to the ILOM prompt.

3. Check the POST execution result with the following command:

```
-> show /SP/faultmgmt -level all
```

Note – Depending on the configuration of ILOM, POST variables, and whether POST detected faults or not, the server might boot, or the system might remain at the `ok` prompt. If the system is at the `ok` prompt, type `boot`.

4. **Use the** `set /SYS keyswitch_state=normal` **command to return the virtual keyswitch to Normal mode (default) so that the system can power on and start the boot process.**

```
-> set /SYS keyswitch_state=normal
Set 'keyswitch_state' to 'normal'
```

▼ Connect to the System Console

Output from POST, OpenBoot, and the Solaris OS is displayed in the system console using the network console on the service processor.

- **Type the** `start /SP/console` **command.**

  Multiple users can be connected to the console, but only one can be attached.

```
-> start /SP/console
Are you sure you want to start /SP/console (y/n)? y
Serial console started.  To stop, type #.
```

Note – For more information about POST output, refer to the *SPARC Enterprise T5440 Server Service Manual*.

▼ Perform a Normal System Initialization

1. **Type the** `start /SYS` **command.**

```
-> start /SYS
Are you sure you want to start /SYS (y/n)? y
Starting /SYS
```

2. **To initiate the power on sequence, type the** `start /SYS` **command.**

   You will see an ILOM CLI alert message on the system console. This message indicates that the system has reset.

```
-> start /SP/console
Are you sure you want to start /SP/console (y/n)? y
Serial console started.  To stop, type #.
```

   The CPU and memory controllers initialize, and eventually OpenBoot initializes. After a number of system console messages, the `ok` prompt appears, or the system will boot into the Solaris OS.

Note – System behavior depends on how the `auto-boot` variable is set. See the *SPARC Enterprise T5440 Server Service Manual* for more information.

   The following example output is a small section of the complete output.

```
0:1:0>
0:1:0>SPARC-Enterprise[TM] T5440 POST 4.27.x.
2007/12/11 18:55

...

0:1:0>Network Interface Unit Tests....Done
0:1:0>Functional CPU Tests....Done
0:1:0>Extended Memory Tests....Done
2007-12-14 16:45:28.800 0:1:0>INFO:
2007-12-14 16:45:28.806 0:1:0>  POST Passed all devices.
2007-12-14 16:45:28.816 0:1:0>POST:     Return to VBSC.
2007-12-14 16:45:28.824 0:1:0>Master set ACK for vbsc runpost
command and spin...


SPARC Enterprise T5440, No Keyboard
...
OpenBoot 4.27.x, 3968 MB memory available, Serial #74409918.
Ethernet address 0:14:4f:6f:67:be, Host ID: 846f67be.


{0} ok
```

Booting the Solaris Operating System

The Solaris OS is preinstalled on the servers on the disk in slot 0. The Solaris OS is not configured (that is, the `sys-unconfig` command was run in the factory). If you boot the system from this disk, you will be prompted to configure the Solaris OS for your environment.

Related Information

- "Solaris OS Host Configuration Reference" on page 36
- *SPARC Enterprise T5440 Server Administration Guide*

▼ Boot the Solaris Operating System

1. **At the `ok` prompt, boot from the disk that contains the Solaris OS.**
   - If you know which disk to boot from, skip this step and perform Step 2.
   - If you need to determine which disk to boot from, type the `show-disks` command at the `ok` prompt to see the path to the configured disks, similar to the following:

```
ok show-disks
a) /pci@0/pci@0/pci@2/scsi@0/disk0
b) /pci@0/pci@0/pci@1/pci@0/pci@1/pci@0/usb@0,2/storage@2/disk
q) NO SELECTION Enter Selection, q to quit: q
ok
```

2. **Type the `boot` command at the `ok` prompt.**

   Use the value from Step 1 to construct the `boot` command. You must append the target to the disk path.

   In the following example, the server is booted from disk 0 (zero) on a SPARC Enterprise T5440 server.

```
ok boot disk0

Boot device: /pci@0/pci@0/pci@2/scsi@0/disk@0  File and args:
SunOS Release 5.10 Version Generic_127127-03 64-bit
...
Use is subject to license terms.
Hostname: hostname
```

```
NIS domain name is x.x.x.x

hostname console login:
```

▼ Avoid Booting the Solaris Operating System at Start Up

In hard drive HDD0, the Solaris OS is preinstalled.

- **If you do not want to start the preinstalled OS, set the Open Boot PROM parameter** `auto-boot?` **to** `false`**. For example:**

```
-> set /HOST/bootmode script="setenv auto-boot? false"
```

▼ Reset the System

- **If it is necessary to reset the system, use the** `shutdown -g0 -i6 -y` **command.**

```
# shutdown -g0 -i6 -y
```

It is not necessary to power the system off and on to simply reset the system.

▼ Power Cycle the System

If a simple reset does not clear a system problem, you can power the system off and on with this procedure.

1. **Shut down the Solaris OS.**

   At the Solaris OS prompt, type the `shutdown -g0 -i0 -y` command. Then type `h` when prompted to halt the Solaris OS and to return to the `ok` prompt.

```
# shutdown -g0 -i0 -y
# svc.startd: The system is coming down.  Please wait.
svc.startd: 91 system services are now being stopped.
Jun 12 19:46:57 wgs40-58 syslogd: going down on signal 15
svc.startd: The system is down.
syncing file systems... done
Program terminated
r)eboot, o)k prompt, h)alt?
```

2. **Switch from the system console prompt to the service processor console prompt by issuing the console escape sequence (by default, `#.` (Pound-Period)).**

```
ok #.
->
```

3. **Using the ILOM CLI, type the `stop /SYS` command to perform a graceful shutdown of the system.**

```
-> stop /SYS
Are you sure you want to stop /SYS (y/n)? y
Stopping /SYS

->
```

Note – To perform an immediate and ungraceful shutdown, use the `stop -force -script /SYS` or `stop -script /SYS` commands. These commands stop everything immediately, ensure that all data is saved before entering these commands.

---

4. **Type the `start /SYS` command.**

```
-> start /SYS
Are you sure you want to start /SYS (y/n)? y
Starting /SYS

->
```

Note – To force a power-on sequence, use the `start -script /SYS` command.

---

5. **Reconnect to the system console with the `start /SP/console` command.**

```
-> start /SP/console
Are you sure you want to start /SP/console (y/n)? y
Serial console started.  To stop, type #.
```

The systems displays various messages, followed by the `ok` prompt.

Related Information

After powering on the system for the first time, you can use the Sun Validation Test Suite (SunVTS™) software to verify the functionality and performance of any installed components, as well as its network connections. Refer to the SunVTS documentation at (http://www.sun.com/documentation) for more information.

For more information on using the ILOM service processor, refer to the *Integrated Lights Out Manager 3.0 Supplement for SPARC Enterprise T5440 Server*.

For more information about configuring the server, refer to the *SPARC Enterprise T5440 Server Administration Guide*.

For more information about adding optional components, refer to the *SPARC Enterprise T5440 Server Service Manual*.

Updating the Firmware

This appendix provides instructions for updating SP firmware.

Topic	Links
Updating both the server firmware and the ILOM firmware using the `flashupdate` command	"Updating Service Processor and Server Firmware" on page 53
Restarting the service processor after updating the firmware	"Updating the Firmware" on page 54

Updating Service Processor and Server Firmware

Use the `flashupdate` command to update both the service processor firmware and the server firmware.

The flash image consists of the following components:

- Service processor firmware
- OpenBoot
- POST
- Reset/config
- Sequencer
- Partition description

Updating the Firmware

To use the features and fixes in subsequent firmware releases, perform "Update the Firmware" on page 54.

▼ Update the Firmware

1. **Ensure that the ILOM service processor network management port is configured.**

   This configuration is required to access the new flash image over the network. See "Configure the Service Processor Network Management Port" on page 41.

2. **Open an SSH session to connect to the service processor.**

```
% ssh root@xx.xxx.xx.x
...
Are you sure you want to continue connecting (yes/no)? yes
...
Password: password (nothing displayed)
Waiting for daemons to initialize...

Daemons ready

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->
```

3. **Verify that the host is powered off.**

   If the host is not powered off, type the `stop /SYS` command.

```
-> stop /SYS
```

4. **Verify that the `keyswitch_state` parameter is set to `normal`.**

```
-> set /SYS keyswitch_state=normal
```

5. **Type the `load` command.**

   The `load` command updates the service processor flash image and the host firmware. The `load` command requires the following information:

   - IP address of a TFTP server on the network that can access the flash image
   - Full path name to the flash image that the IP address can access

     The command usage is as follows:

   `load [-script] -source tftp://`*`xxx.xxx.xx.xx/pathname`*

   where:

   - `-script` – Does not prompt for confirmation and acts as if yes was specified
   - `-source` – Specifies the IP address and full path name (URI) to the flash image

```
-> load -source tftp://xxx.xxx.xx.xx/pathname
 NOTE: A firmware upgrade will cause the server and ILOM to
       be reset. It is recommended that a clean shutdown of
       the server be done prior to the upgrade procedure.
       An upgrade takes about 6 minutes to complete. ILOM
       will enter a special mode to load new firmware. No
       other tasks can be performed in ILOM until the
       firmware upgrade is complete and ILOM is reset.

Are you sure you want to load the specified file (y/n)? y
Do you want to preserve the configuration (y/n)? y
.............................................................

Firmware update is complete.
ILOM will now be restarted with the new firmware.
Update complete. Reset device to use new image.

->
```

   After the flash image has been updated, the system will automatically reset.

   The service processor resets, runs diagnostics, and returns to the login prompt (on the serial console), similar to the following example.

```
U-Boot 1.1.1 (May 23 2007 - 21:30:12)
...
POST cpu PASSED
POST ethernet PASSED
Hit any key to stop autoboot:  0
## Booting image at fe080000 ...

IP Protocols: ICMP, UDP, TCP, IGMP
```

```
Checking all file systems...
fsck 1.37 (21-Mar-2005)
Setting kernel variables ...
... done.
Mounting local filesystems...
Cleaning /tmp /var/run /var/lock.

Identifying DOC Device Type(G3/G4/H3) ...
OK

Configuring network interfaces...Internet Systems Consortium DHCP
Client V3.0.1
Copyright 2007 Internet Systems Consortium.
All rights reserved.
For info, please visit http://www.isc.org/products/DHCP

eth0: config: auto-negotiation on, 100FDX, 100HDX, 10FDX, 10HDX.
Listening on LPF/eth0/00:14:4f:3f:8c:af
Sending on   LPF/eth0/00:14:4f:3f:8c:af
Sending on   Socket/fallback
DHCPDISCOVER on eth0 to 255.255.255.255 port 67 interval 6
eth0: link up, 100 Mbps Full Duplex, auto-negotiation complete.
DHCPDISCOVER on eth0 to 255.255.255.255 port 67 interval 15
Hostname: hostname.
Starting portmap daemon: portmap.
Initializing random number generator...done.
INIT: Entering runlevel: 3
Starting system log daemon: syslogd and klogd.
Starting periodic command scheduler: cron.
Starting IPMI Stack..... Done.
Starting OpenBSD Secure Shell server: sshd.
Starting Servicetags listener: stlistener.
Starting FRU update program: frutool.

hostname login:
```

Selecting a Boot Device

This section provides instructions on selecting a boot device.

Selecting a Boot Device

The boot device is specified by the setting of an OpenBoot configuration variable called `boot-device`. The default setting of this variable is `disk net`. Because of this setting, the firmware first attempts to boot from the system hard drive, and if that fails, from the on-board NET0 Gigabit Ethernet interface.

This procedure assumes that you are familiar with the OpenBoot firmware and that you know how to enter the OpenBoot environment. For more information, see the *SPARC Enterprise T5440 Server Administration Guide*.

Note – The serial management port is preconfigured as the default system console port. For more information, see the *SPARC Enterprise T5440 Server Overview Guide*.

If you want to boot from a network, you must connect the network interface to the network.

▼ Select a Boot Device

- **At the `ok` prompt, type:**

```
ok setenv boot-device device-specifier
```

where the *device-specifier* is one of the following:

- `cdrom` – Specifies the DVD drive
- `disk` – Specifies the system boot disk (internal disk 0 by default)
- `disk0` – Specifies internal drive 0

- `disk1` – Specifies internal drive 1
- `disk2` – Specifies internal drive 2
- `disk3` – Specifies internal drive 3
- `net`, `net0`, `net1`, `net2`, `net3` – Specifies the network interfaces
- *full path name* – Specifies the device or network interface by its full path name

---

Note – The Solaris OS modifies the `boot-device` variable to its full path name, not the alias name. If you choose a nondefault `boot-device` variable, the Solaris OS specifies the full device path of the boot device.

Note – You can specify the name of the program to be booted as well as the way the boot program operates. For more information, refer to the *OpenBoot 4.x Command Reference Manual* in the *OpenBoot Collection AnswerBook* for your specific Solaris OS release.

If you want to specify a network interface other than an on-board Ethernet interface as the default boot device, you can determine the full path name of each interface by typing either of the following commands:

```
ok show-devs
ok show-nets
```

The `show-devs` command lists the system devices and displays the full path name of each PCI device.

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